M.Sc. Course					SC 503P Solid State Physics Laboratory					
Teaching Scheme					Examination Scheme					
L	T	P	C	Hrs/Week	Theory			Practical		Total Marks
					MS	ES	IA	LW	LE/Viva	
0	0	4	2	4	0	0	0	50	50	100

COURSE OBJECTIVES

- To make the students to understand a broad range of experimental techniques and to enable them to demonstrate their ability to use the techniques in conducting scientific experiments and observations.
- To experimentally realize the structural, magnetic, electric, dielectric and ferroelectric behavior of various materials.

List of Experiments:

1. Determination of lattice constant and crystal structure of given powder sample using X-ray diffraction method.
2. Dynamics of mono and diatomic lattices.
3. To determine the dielectric constant of Various materials.
4. Investigation of Four probe and two probe resistance measurement and determination of contact resistance.
5. Investigation of B-H curve: (i) to determine the value of permeability and coercivity of various materials.
6. Study of meissner effect.
7. Studies on the Electric Spin Resonance spectrum of the given sample and determination of Landeg factor.
8. Investigation of Hall Voltage as a function of current and magnetic field and determination of Hall Coefficient and carrier concentration of the given sample of semiconductor.
9. Study of magneto resistance behavior of semiconductor/manganites materials.
10. Investigation of ferroelectric behavior.
11. Visit of characterization facility of Research institute

COURSE OUTCOMES

After completion of this course students will be able to;

CO1: analyze the crystal structures by applying crystallographic parameters and determine crystal structure by XRD data.
CO2: understand the magnetic and dielectic and ferroelectric properties of materials.
CO3: understand the basic phenomenon of superconductivity.
CO4: will be able to collect data and revise an experimental procedure iteratively and reflectively
CO5: Evaluate the process and outcomes of an experiment quantitatively and qualitatively
CO6: Communicate the process and outcomes of an experiment.

Course Delivery Methods

Lecture by use of boards/LCD projectors/OHP projectors	No
Tutorials/Assignments	No
Seminars	No
Mini projects/Projects	Yes
Laboratory experiments/teaching aids	Yes
Industrial/guest lectures	No
Industrial visits/in-plant training	Yes
Self- learning such as use of NPTEL materials and internets	No
Simulation	No

Course Outcome (CO) Attainment Assessment tools & Evaluation procedure

Direct Assessment:

	Assessment Tool	% Contribution during CO Assessment	Maximum Marks	Exam Duration
Examiantion	Laboratory work	50%	50	Conti...
	Practical / Viva	50%	50	2 hours

Assessment Components	CO1	CO2	CO3	CO4	CO5	CO6

Laboratory work	YES	YES	YES	YES	YES	YES
Practical / Viva	YES	YES	YES	YES	YES	YES

Indirect Assessment :

1. Student Feedback on Faculty
2. Student Feedback on Course Outcome

Mapping of Course Outcomes onto Program Outcomes

Course Outcome	Programme Outcome				
	PO1	**PO2**	**PO3**	**PO4**	**PO5**
CO1: analyze the crystal structures by applying crystallographic parameters and determine crystal structure by XRD data.	**H**	**H**	**H**	**M**	**L**
CO2: understand the magnetic and dielectic and ferroelectric properties of materials.	**H**	**H**	**H**	**H**	**H**
CO3: understand the basic phenomenon of superconductivity.	**H**	**M**	**H**	**M**	**L**
CO4: will be able to collect data and revise an experimental procedure iteratively and reflectively	**H**	**H**	**H**	**H**	**L**
CO5: Evaluate the process and outcomes of an experiment quantitatively and qualitatively	**M**	**H**	**H**	**H**	**H**
CO6: Communicate the process and outcomes of an experiment.	**L**	**L**	**M**	**H**	**H**